Claims

1. An electrically controlled device for injecting or infusing medical preparations in the human body in which device the controlling is performed by a sealed electric circuit receiving signals
5   from sensors which monitors selected parameters describing conditions of the device, characterised in that the sensors are integrated in a sealed circuit block and are of a kind with no mechanically opened or closed switches.

2. An electrically controlled device according to claim 1, characterised in that the sealed cir-
10   cuit block, a power supply for this circuit block and other electric components connected to said sealed circuit block are accommodated in one rigid part of the device.

3. An electrically controlled device according to claim 2 characterised in that said rigid part of the device is a dose setting and injection button.

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4. A device according to claim 1, 2 or 3, characterised in that at least one sensor is a Hall element.

5. A device according to claim 4, characterised in that the Hall element is signalled by a mov-
20   able magnet fixed to a part of the device to monitor the position of this part relative to the part accommodating the sealed electric circuit block.

6. A device according to claim 4 or 5, charaterised in that the sealed electronic circuit block comprises a timer and has a first input for a reset signal, a second input for a signal activat-
25   ing a read out of the electronic circuit, and an output to a display displaying the read out of the time lapsed after the latest receipt of a signal on said first input, the sealed circuit further being provided with a sensor connected to said first input, which sensor gives off a signal when the injection button is pressed to move the piston rod, and with a means for optional sending of a signal to the second input to activate the read out of the electronic circuit.

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7 A device according to claim 6, characterised in that the sealed electronic circuit is so designed that a signal sent to the second input opens the energizing of the Hall element and other energy consuming sensors.

8. A device according to claim 6 or 7, characterised in that the Hall element is designed to send a signal to the first input when it detects a change of the position of the magnet relative to the part accommodating the sealed electric circuit .

5   9. A device according to claim 6, 7 or 8, characterised in that the means optionally sending the second signal is a switch outside the sealed circuit block .

10. A device according to anyone of the previous claims 5 – 9, characterised in that the magnet has the shape of a magnet ring presenting a sinus shaped magnetic field along

10   the perimeter.

11. A device according to claim 10 characterised in that a number of Hall elements is provided , which Hall elements are positioned along a circle arc which follows a section of said magnet ring.

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12 A device according to claim 11 characterised in that four Hall elements are provided

13 A device according to claim 12 characterised in that the said arc of a circle corresponds to 1,5 times the arc between two poles and that a first and a fourth Hall element are posi-

20   tioned at opposite ends of the arc and a second and a third Hall element are positioned between the ends of the arc so that the four Hall elements are placed with equidistant spaces along said arc of a circle.

14. A device according to anyone of the claims 10 – 13 characterised in that the number of

25   poles is 12 and the length of the circular arc is 45°.

15. A device according to claim 13 and 14 characterised in that outputs from the first and the third Hal element are connected to input terminals on a first differential operational amplifier and the outputs from the second and the fourth Hall elements are connected to input termi-

30   nals on a second differential operational amplifier, and output signals from the differential operational amplifiers are through analogue/digital converters and a normalising circuit lead to a look up table circuit wherein one signal is divided with the other to obtain a tangent function which is used as entrance to a table.